# SKILLED WORKERS SHORTAGES IN THE PRINTING INDUSTRY: PERSPECTIVES FROM INDUSTRY EXPERTS

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**Abstract:**

The printing industry encounters substantial difficulties stemming from a deficiency of skilled workers, impacting production quality, efficiency, and competitiveness. This article examines the intricate difficulties associated with the skilled workers deficit in the printing sector. It analyze their significant impacts and suggests thorough remedies to tackle the problem. A comprehensive qualitative analysis of interviews with industry stakeholders revealed significant challenges, including employment practices, deficiencies in printing training institutes, and adverse industry perceptions. Challenges related to skilled workers shortages encompass diminished quality, lowered customer satisfaction, and decreased production efficiency. Strategies to mitigate these challenges encompass efficient human resources management, skills enhancement and training programs, technological advancement, and outsourcing. Future challenges, including technological disruption, demographic changes, and sustainability issues, necessitate proactive planning and collaboration to maintain the industry's viability and competitiveness.

**Keywords:**

Skilled Worker Shortages, Printing Industry, Workforce Challenges, Training And Education Initiatives, Technology Adoption

## Introduction

Malaysia's printing sector represents a vital economic component, demonstrating remarkable financial performance. The industry achieved revenues of approximately RM13,709 million in 2022, marking a 6.2% expansion from the previous period (Department of Statistics Malaysia,

2023). The sector encompasses various segments, from commercial and packaging operations to security printing and publishing ventures.

Employment statistics reveal significant growth in the manufacturing workforce, particularly in printing and media reproduction. The sector saw an increase from 67,428 employees in 2021 to 70,120 in 2022, representing a 3.99% growth (Department of Statistics Malaysia, 2023).

The industry's success heavily depends on professionals with specialized expertise in prepress operations, press management, and finishing processes (Ali, 2018; Ali et al., 2022; Ananto et al., 2019). The current shortage of such skilled professionals poses significant operational challenges (Mtshali et al., 2022). This deficiency often results in compromised production standards, elevated error frequencies, and reduced operational efficiency in meeting market requirements.

Moreover, the sector is undergoing rapid digital transformation, requiring personnel proficient in advanced technological systems and software applications (Rahmat et al., 2022; Singla & Anil, 2017). These skills gap potentially hampers adaptation to evolving market demands, particularly when combined with shifting customer expectations, technological progress, evolving quality benchmarks, and workforce management challenges (Amri et al., 2022).

**Literature Review**
The printing industry in Malaysia plays a crucial role in the nation's economic landscape, contributing significantly to the manufacturing sector and employment. This review examines the current state of the industry, focusing on workforce dynamics, technological advancements, and challenges faced by printing companies.

*Workforce Dynamics and Challenges*
The printing industry in Malaysia is a significant employer, providing jobs across various roles and skill levels. In 2023, the sub-sector of printing and reproduction of recorded media employed 71,281 workers, marking a 1.7% increase from the previous year (Department of Statistics, 2023). However, despite this growth, the industry faces a persistent challenge in skilled worker shortages. The Department of Skills Development identified 64 job positions within the industry in 2012, covering pre-print, print, and post-print sub-sectors (Department of Skills Development, 2012). This occupational structure highlights the diverse skill sets required in the industry. However, the literature reveals a gap between the skills taught in educational institutions and those demanded by the industry(Ainul Azyan et al., 2017). This misalignment contributes to the ongoing skilled worker shortage, as graduates often lack the practical experience and specialized knowledge required by employers.

*Technological Advancements and Industry Adaptation*
The printing industry is experiencing a significant shift towards digital technologies, demanding a workforce adept at handling advanced equipment and software (MIDA, 2024). This technological evolution presents both opportunities and challenges. While digital printing technologies offer increased efficiency and new capabilities, they also require workers to continually update their skills (Ali et al., 2022). The printing industry has experienced transformative advancements driven by digital printing, 3D printing, sustainability efforts, automation and AI Integration. The printing industry has embraced these technological advancements to stay competitive and meet the evolving demands of both local and international markets (Masod et al., 2021).

However, the literature suggests that many printing companies in Malaysia are struggling to adapt to these technological changes due to the shortage of skilled workers (Selamat & Mukapit, 2018). This gap in adaptation could potentially hinder the industry's competitiveness and growth in the long term.

## Skills Development and Training

The literature highlights the critical need for effective skills development and training programs in the printing industry. However, there appears to be a lack of strong collaboration between training institutes and industry players (Horváth et al., 2020), hampering the seamless integration of graduates into the workforce. This gap suggests a need for more innovative partnerships between educational institutions and industry stakeholders to ensure that training programs align with current industry needs.

## Future Challenges and Opportunities

The printing industry faces several future challenges, including technological disruption, demographic shifts, and sustainability concerns. These challenges require proactive planning and collaboration among industry stakeholders to ensure the industry's continued viability and competitiveness (Masod & Zakaria, 2024).

## Critical Analysis and Research Gaps

The existing literature on the Malaysian printing industry provides valuable insights into its structure and challenges; however, several gaps and contradictions persist. One major gap is the limited research on strategy and practices in addressing the skilled worker shortage. Future studies could evaluate the impact of these initiatives and propose improvements. Additionally, while the importance of technological adaptation is widely acknowledged, there is insufficient analysis of the specific barriers preventing companies from successfully implementing new technologies, highlighting the need for more in-depth research in this area (Gallagher, 2014). Furthermore, there is a paradox between the growing number of employed workers in the industry and the persistent shortage of skilled labor, which requires further investigation to understand the underlying factors. Although the literature identifies the need for collaboration between industry and educational institutions, it lacks concrete strategies or case studies demonstrating successful partnerships, suggesting that future research could focus on developing and evaluating collaborative models to bridge the skills gap. Lastly, the impact of global trends such as sustainability and digitalization on the workforce needs of the Malaysian printing industry remains understudied. Exploring how these trends might reshape skill requirements could offer valuable insights for future workforce planning. By addressing these gaps and contradictions, future research can contribute to a more comprehensive understanding of the challenges faced by the Malaysian printing industry and help inform more effective strategies to overcome the skilled worker shortage.

## Research Methodology

Our investigation employed a comprehensive qualitative approach, engaging eight seasoned professionals from the printing sector. The selection criteria emphasized individuals with over a decade of industry experience, encompassing business proprietors and executives in personnel and operations divisions.

The methodological framework utilized thematic analysis to process and interpret the gathered data. We adopted an exploratory, inductive approach that allowed patterns and insights to

emerge naturally from the participants' responses, rather than testing predetermined hypotheses. This methodology proved particularly effective in uncovering nuanced perspectives on workforce challenges within the industry.

## The Findings: Root Causes
The investigation revealed three fundamental factors contributing to the workforce crisis:

### Employment Structure Issues
The industry's paradoxical approach to recruitment creates a significant barrier - while seeking experienced personnel, it simultaneously restricts opportunities for emerging talent. This self-perpetuating cycle limits the integration of new graduates into the workforce. Additionally, inadequate investment in professional development and competitive compensation packages further exacerbates the situation.

### Educational System Gaps
A substantial disconnect exists between academic preparation and industry requirements. Training institutions frequently lag behind in incorporating current technological advances, resulting in graduates who lack crucial practical skills. The absence of robust industry-academia partnerships further widens this gap.

### Industry Images
The sector faces perception issues that deter potential talent. Many view printing as a traditional industry with limited innovation potential, leading qualified candidates to pursue opportunities in seemingly more dynamic sectors. This has resulted in an increased reliance on international labor to fill critical positions.
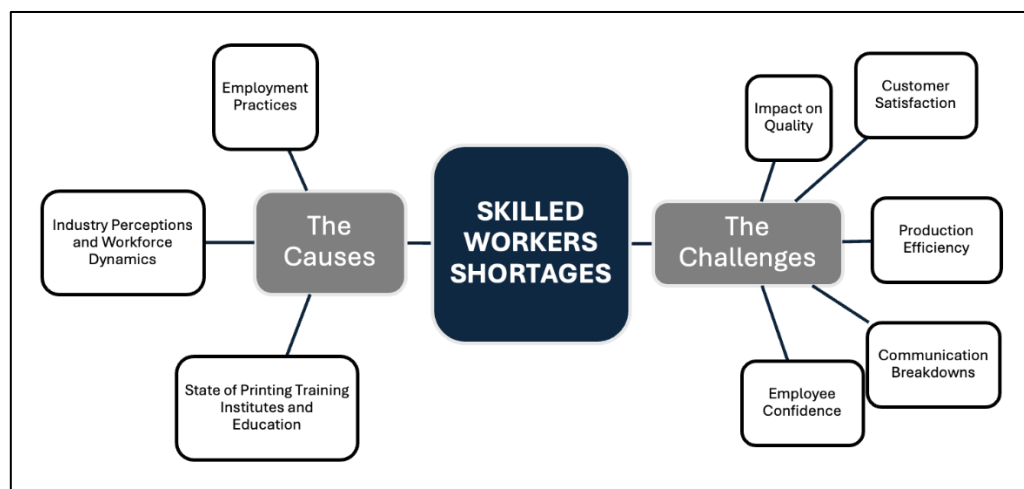


**Figure 1: The Causes And Challenges Of Skilled Workers Shortages**

## The Challenges
Problems caused by a lack of qualified personnel were mentioned by every single respondent in this survey. A prominent theme that surfaced concerns the significant influence on the quality of the final product. Due to a lack of qualified employees, printing companies frequently require assistance in order to consistently deliver high-quality products and services. Among the many ways this shortcoming shows up is in the form of shoddy construction and subpar final products. Without the right mix of skills and experience among current employees,

maintaining high quality becomes a daunting task. Customers may become less satisfied and loyal as a result of these quality issues, which can damage printing companies' reputations.

Another important part of the printing industry that is severely impacted by the lack of qualified workers is customer satisfaction. Due to staffing issues and excessive workloads, printing companies frequently fall short of meeting customer demand, which is a major cause for concern. Consequently, clients may face problems acquiring the services and goods they desire or see a delay in the delivery of their orders. Clients may see a drop in the quality or timeliness of the work produced, which can lead to an increase in customer complaints. This is because there is a need for more skilled workers. In order to maintain a positive reputation and stay competitive in the market, printing companies must promptly and satisfactorily address customer needs and concerns.

The shortage of trained workers is having a significant effect on production efficiency, among other crucial areas. A number of problems have been plaguing the sector recently, including slowing work speeds and productivity, creating bottlenecks in production, and delaying jobs. Keeping up with demand and maintaining optimal production levels can be challenging for printing companies, especially when there are fewer skilled workers available to handle the workload. Due to a lack of qualified workers, production is sluggish and customers have fewer job options to choose from. Another way in which a lack of qualified workers affects printing companies is by causing havoc with workflow and making already difficult problems much worse.

Problems caused by a lack of competent workers are made worse by misunderstandings and miscommunications. Production mistakes and inaccuracies can occur when there is a lack of knowledge and experience in interpreting instructions and specifications. The inability to effectively communicate not only makes it harder to complete tasks, but it also causes more time and resources to be wasted.

In addition, other, less experienced workers' self-assurance and motivation to complete printing tasks are greatly affected by the shortage of skilled workers. Competent coworkers might make less experienced employees feel threatened and unsure of their place in the company. A lack of self-assurance can show up in various ways, such as an unwillingness to do things like operate heavy machinery or accept more responsibility. When employees lack confidence in their abilities, they may avoid challenging themselves, leading to an inefficient and stressful work environment. Because of this hesitation, tasks may go unfinished or need more supervision from supervisors, which slows down production. Also, less experienced employees may not be able to work well with others due to a lack of self-assurance, which can lead to misunderstandings and lower output.

**The Strategies**
During the interviews, respondents highlighted several key strategies employed within their organisations to address the challenges of skilled worker shortages in the printing industry. These strategies primarily revolved around effective human resource management, skills development and training initiatives, and the strategic outsourcing of specific job functions.

### *Strategy 1: Effective Human Resources Management*

To effectively tackle the shortage of skilled workers in their printing company, respondents have delineated a comprehensive strategy focused on proficient human resource management. Attracting top talent commences with strategic talent acquisition initiatives, including internship programs that guarantee immediate employment for candidates who fulfill the specified criteria upon completion of training. Moreover, active job listings on platforms such as Jobstreet and engagement in job fairs expand the candidate pool. The company fosters strong collaborations with educational institutions and training centers to ensure a consistent influx of qualified and skilled labor. Simultaneously, by forging strong partnerships with educational institutions such as vocational colleges, polytechnics, and universities, printing companies can actively influence the development of curricula and training programs that align more closely with industry requirements. This enables graduates to acquire pertinent knowledge and skills prior to entering the job market, thereby minimizing the disparity between formal education and actual industry requirements.

Moreover, providing competitive remuneration packages is essential. Respondents emphasize the necessity of offering elevated salaries, especially in areas such as the Klang Valley, where living expenses are greater, to retain current employees and attract new talent. They also encompass appealing job propositions with advantageous conditions and prospects for career advancement. Establishing a positive workplace culture is equally vital, with leadership exhibiting a commitment to active engagement in operations. The company prioritizes hospitality and support, ensuring employees feel appreciated through comfortable facilities and amenities, thereby promoting a unified team environment. Retaining seasoned senior operators is essential for this cohesion, as they fulfill critical roles in operational management and mentoring junior personnel.

Furthermore, the company prioritizes cultivating robust relationships among employees and promoting spiritual fulfillment by incorporating practices such as congregational prayers and religious assemblies into the workplace. By employing these diverse strategies, respondents seek to mitigate the scarcity of skilled labor and foster a supportive and conducive workplace for employee development and professional growth.

Moreover, printing companies regard foreign labor as an alternative strategy to address this issue. Despite lacking experience in the printing industry, foreign workers are frequently appreciated for their rapid learning abilities. The capacity to rapidly acquire new knowledge and skills can be a significant advantage in addressing the deficit of skilled labor. By means of a systematic training program and ongoing oversight, foreign workers can acquire a comprehensive understanding of company operations and printing processes, thereby making significant contributions to the team in a relatively brief timeframe. Although initiating their entry into the industry may require additional effort, their rapid learning capacity renders them valuable for addressing workforce shortages.

Efficient human resource management directly tackles the fundamental cause of the skilled labor deficit in the printing sector. To improve employment practices, initiatives like internship programs and partnerships with training centers offer aspiring professionals practical experience, thereby bridging the divide between formal education and industry requirements. Collaboration with training institutions guarantees that graduates possess essential skills, while attractive compensation packages and a favorable workplace culture draw and retain proficient employees, mitigating adverse industry perceptions. Moreover, the arrival of foreign workers

possessing rapid learning abilities addresses urgent shortages, enhances workforce diversity, and contests prevailing stereotypes. Through the execution of this comprehensive strategy, printing companies can cultivate a proficient workforce and address shortages, thereby promoting a more inclusive and dynamic industry.

### Strategy 2: Skills Development and Training Initiatives

Participants emphasized the importance of skills development and training in addressing the deficit of skilled labor in the industry. In this context, mentorship and peer systems developed as essential strategies, providing guidance from experienced employees to their less experienced counterparts. This is accomplished through various methods, including a peer system in which more experienced employees mentor newcomers in the field. Furthermore, the implementation of on-the-job training and the preparation of an annual training plan guarantee that employees receive consistent training to enhance their skills. Online training is organized, featuring a structured learning plan within the company and a collaborative training program with CIAST. Furthermore, a salary scheme was implemented to incentivize employees to attain elevated skill levels. Concurrently, additional incentives were offered to motivate them to enhance their skills. By implementing this strategy, printing companies can facilitate skill acquisition and enhance their employees' competencies in executing assigned tasks.

The skills development and training initiatives proposed directly address the root causes of skilled worker shortages in the printing industry, focusing on quality, customer satisfaction, production efficiency, communication failures, and employee confidence. Printing companies utilize mentorship programs and on-the-job training to provide employees with guidance, thereby improving skills and craftsmanship, which results in superior output. These initiatives enhance employees' capacity to fulfil customer demands efficiently, minimizing delays and errors, thereby augmenting overall customer satisfaction. Moreover, skills development initiatives mitigate production bottlenecks and job delays by emphasizing enhancements in work speed, productivity, and operational efficiency. Effective communication training reduces errors and inaccuracies, while direct training opportunities and ongoing development enhance employee confidence, alleviating fears related to machinery operation and enhancing overall job satisfaction. These initiatives are essential for mitigating skilled worker shortages, improving employee competencies, and cultivating a more efficient and content workforce in the printing sector.

### Strategy 3: Technology Advancement

A strategic approach employed by printing companies to mitigate skilled worker shortages is the utilization of technological advancements. Rapid technological advancements in the printing industry have rendered automation and digitalization essential for optimizing operations and diminishing reliance on manual labor. Printing firms allocate resources to sophisticated printing technologies, including digital printing presses, computer-to-plate systems, and automated finishing machinery. These technologies improve efficiency and productivity while necessitating fewer specialized skills for operation, thereby alleviating the effects of skill shortages. Moreover, implementing advanced software solutions for design, prepress, and workflow management enhances collaboration and reduces the necessity for highly skilled technicians.

With the integration of new technologies, these sophisticated machine suppliers are dedicated to offering ongoing training and upskilling initiatives for their personnel. This initiative seeks to provide employees with the technical skills necessary to proficiently utilize advanced

technologies. Employee training emphasizes acclimating personnel to new software interfaces, troubleshooting methodologies, and enhancing workflow processes. Consequently, printing firms can close the skills gap and cultivate a versatile workforce capable of fully leveraging technological advancements. This dual approach, involving technological investment and workforce enhancement, mitigates current skills deficits and equips printing firms to prosper in a progressively digital and automated environment.

### Strategy 4: Outsourcing

Printing companies with a skilled worker shortage usually outsource to other companies that have the expertise or technology required to complete the job. This strategy involves assigning tasks or projects to external partners with the necessary skills and resources. Instead of managing tasks internally, outsourcing involves outsourcing them to a vendor or service provider. When they lack skilled workers or capacity, printing companies outsource certain tasks to other firms.

The outsourcing process begins with a company's internal competency assessment and the identification of areas lacking skilled workers or specialized equipment. After identifying these areas, companies seek printing firms with the skills, equipment, and capacity to outsource. Contracting and agreeing with outsourcing partners is crucial. This agreement specifies the outsourcing scope, quality, timelines, pricing, and other terms. This stage requires good communication and understanding of expectations. The original printing company oversees and controls outsourcing quality. They monitor outsourced tasks, assess quality, and ensure the final product meets client standards before delivery. The original printing company evaluates the outsourcing partner after the project. This assessment helps them evaluate the outsourcing agreement and decide whether to continue or change it.

Outsourcing printing jobs to other firms can reduce skill gaps and ensure timely delivery and quality. It lets printing companies efficiently meet customer demands with external expertise and resources.

| SKILLED WORKERS SHORTAGES IN PRINTING INDUSTRY | |
|---|---|
| **CAUSES** | **CHALLENGES** |
| **Employment Practices**<br>Demand for experienced workers<br>Lack of direct training<br>Insufficient opportunities for development<br>Low pay | **Impact on Quality**<br>Poor workmanship<br>Low-quality output |
| **Printing Training Institutes and Education**<br>Failure to address critical skill areas<br>Lack of exposure to industry technologies<br>Inadequate collaboration between institutes and industry players | **Customer Satisfaction**<br>Inability to meet customer demand<br>Increase in customer complaints |
| **Industry Perceptions**<br>Negative perception of the industry<br>Diminished interest among students<br>Dominance of foreign workers | **Production Efficiency**<br>Decreased work speed and productivity<br>Production bottlenecks and job delays |
| | **Communication Breakdowns**<br>Misinterpretation of specifications<br>Errors and inaccuracies in production |
| | **Employee Confidence**<br>Feelings of insecurity and uncertainty<br>Fear of operating machinery |

| PRINTING INDUSTRY STRATEGIES | | | |
|---|---|---|---|
| **Strategy 1:**<br>**Human Resource Management** | **Strategy 2:**<br>**Skills Development and Training** | **Strategy 3:**<br>**Technology advancement** | **Strategy 4:**<br>**Outsourcing** |
| • Talent Acquisition<br>• Employee Retention<br>• Employee Well-being<br>• Incentive Programs | • Skills Development<br>• Collaboration with Training Providers | • Continuous training and upskilling programs provided by technological vendor | • Outsource the work to other printing companies that have the necessary skills and expertise. |

| THE RESULTS | | | |
|---|---|---|---|
| • Pipeline of qualified candidates<br>• Reduced gap between education and industry needs<br>• Attract and retain skilled workers<br>• Positive work environment<br>• Sense of belonging and fulfillment among employees<br>• Quick learning skills fill workforce gaps<br>• Diversified workforce, challenging stereotypes<br>• Bridged gap between education and industry needs<br>• Countered negative industry perceptions<br>• Fostered skilled and inclusive workforce | • Improved guidance and skill development<br>• Skill enhancement<br>• Accessible learning via digital platforms<br>• Collaborative learning with industry partners<br>• Workforce incentivized for skill development<br>• Better workmanship for higher-quality output<br>• Improved ability to meet customer demands, enhancing satisfaction<br>• Increased work speed, productivity, and operational efficiency<br>• Reduced errors and inaccuracies with clear communication training<br>• Enhanced confidence and job satisfaction, less fear of operating machinery | • Streamlined operations and reduced dependency on manual labor<br>• Increased efficiency and productivity<br>• Mitigated impact of skill shortages<br>• Equipped workforce with technical competencies<br>• Familiarized employees with new software interfaces<br>• Optimized workflow processes<br>• Bridged the skills gap and fostered adaptability | • Address skill shortages and capacity constraints<br>• Ensure timely delivery of projects<br>• Maintain quality standards<br>• Leverage external expertise and resources<br>• Monitor progress and conduct quality checks throughout the outsourcing process<br>• Evaluate performance of outsourcing partner for future collaboration |

**Figure 2: The Causes, the Challenges and the Strategies**

## Future Challenges for Printing Workforce

Rapid changes in technology, shifting consumer tastes, and competition from around the world are all problems that the printing industry has to deal with. Technological progress in areas like digital printing, automation, and artificial intelligence is changing how businesses work, which poses a big problem. These new technologies offer chances for better quality and efficiency, but they also mean that traditional printing workers need to learn new skills or get better at old ones in order to stay relevant in a world that is becoming more and more digital. Also, changes in the population, like an aging workforce and fewer young people interested in manufacturing jobs, may make it harder to find skilled workers. To deal with this demographic problem, the industry needs targeted strategies for hiring and keeping employees, as well as projects that make the industry more appealing as a place to work.

Concerns about sustainability are growing, which is why the printing industry needs to use green technologies and practices that are better for the environment. To make sure these standards are met, printing staff may need extra training to make sure they follow sustainability guidelines. Globalization also makes the competition tougher, so printing workers need to be able to work in a global market and understand different cultures. It's important to remember that things are changing quickly and that the strategies we're using now might not work in the future. To deal with these problems and keep the printing workforce viable and competitive, it is important for policymakers, training providers, and industry stakeholders to plan ahead, invest, and work together."

## Conclusion

The deficit of skilled labor in the printing sector presents complex challenges that necessitate strategic measures for resolution. Qualitative analysis of interviews with industry stakeholders revealed that inadequate training, low compensation, and restricted skill development opportunities contribute to the demand for more skilled workers. Nevertheless, flexible strategies like talent acquisition, employee retention, and partnerships with training providers present feasible solutions. Moreover, it is imperative to confront forthcoming challenges, such as technological disruption and demographic changes, through strategic planning and cooperation. By employing these strategies and adjusting to changing market dynamics, the printing industry can address skilled workers shortages and secure its future growth and competitiveness.

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